

CLAIMS

What is claimed is:

- 1 1. A method for prolonging residence time of an agent in a tissue, comprising the
2 steps of:
 - 3 contacting the agent with the tissue;
 - 4 contacting a biodegradable barrier with a surface of the tissue, the barrier
5 having a binding member; and
 - 6 allowing a sufficient amount of the binding member to couple the barrier
7 with the surface to hinder diffusion of the agent through the surface.
- 1 2. The method of claim 1, further including the step of allowing the agent to penetrate
2 walls of the tissue prior to contacting the barrier.
- 1 3. The method of claim 1, further including the step of providing a conduit having an
2 opening that is proximal to the tissue and flowing the agent and the barrier into the
3 conduit and through the opening.
- 1 4. The method of claim 3, further including the steps of applying a first pressure
2 through the conduit to administer the agent and applying a second pressure through
3 the conduit to administer the barrier, wherein the second pressure is lower than the
4 first pressure.
- 1 5. The method of claim 1, wherein the tissue is a vessel.
- 1 6. The method of claim 5, wherein the agent is an anti-proliferative drug.

- 1 7. The method of claim 1, wherein the binding member is a cationic member and the
2 surface of the tissue includes an anionic member for attachment of the binding
3 member.
- 1 8. The method of claim 7, wherein the anionic member is an endothelial cell.
- 1 9. The method of claim 7, wherein the anionic member is extracellular matter.
- 1 10. The method of claim 1, wherein the binding member is an anionic member and the
2 surface of the tissue includes a cationic member for attachment of the binding
3 member.
- 1 11. The method of claim 10, further including the step of adhering the cationic member
2 to the surface of the tissue after contacting the agent and prior to contacting the
3 barrier.
- 1 12. The method of claim 1, wherein the barrier is a naturally occurring chemical.
- 1 13. The method of claim 12, wherein the barrier includes an amino acid.
- 1 14. The method of claim 13, wherein the amino acid is poly-L-lysine.
- 1 15. The method of claim 1, further including the step of attaching a second agent to the
2 barrier after allowing the binding member to couple the barrier with the surface.
- 1 16. A method for prolonging residence time of an agent at a tissue, comprising the steps
2 of:
3 contacting a biodegradable barrier with a surface of the tissue, the barrier
4 having a binding member;

5 allowing the binding member to couple the barrier with the surface; and
6 contacting the agent to the barrier such that agent is retained at the tissue for
7 a prolonged period of time compared to the presence of the agent without
8 the barrier.

1 17. The method of claim 16, wherein the tissue is a vessel.

1 18. The method of claim 16, wherein the binding member is a cationic member and the
2 agent includes an anionic member for attachment of the binding member.

1 19. The method of claim 16, wherein the barrier includes an amino acid.

1 20. The method of claim 19, wherein the amino acid is poly-L-lysine.

1 21. The method of claim 16, wherein the agent is heparin.

1 22. The method of claim 16, further including the step of contacting a second agent to
2 the tissue prior to contacting the barrier.

1 23. A method for prolonging residence time of an agent at a tissue site, comprising the
2 steps of:

3 time-varied administering the agent and a biodegradable barrier to a patient,
4 the barrier being separate from the agent when administered and having a
5 binding member; and

6 allowing a sufficient amount of the binding member to couple the barrier to
7 the surface of the tissue to hinder transport of the agent away from the tissue
8 site.

- 1 24. The method of claim 23, wherein the time-varied administering is by sequentially
2 flowing agent and barrier through a conduit having an opening that is proximal to
3 the tissue.
- 1 25. The method of claim 23, wherein the barrier includes an amino acid.
- 1 26. The method of claim 24, wherein the amino acid is poly-L-lysine.
- 1 27. A method of formulating a biodegradable barrier composition for hindering
2 transport of an agent away from a tissue, which comprises the steps of:
3 admixing a barrier having a binding member and a delivery carrier, the
4 barrier component being present in an amount sufficient to couple to a surface of
5 the tissue and to permit transport of the agent from the tissue at a lower rate than
6 transport in the absence of the barrier component.
- 1 28. The method of claim 27, wherein the binding member is a counter ion of ionic a
2 member on the surface of the tissue for attachment of the binding member.
- 1 29. The method of claim 28, wherein the binding member is a cationic member and the
2 member on the surface of the tissue is an anionic member.
- 1 30. The method of claim 28, wherein the binding member is an anionic member and the
2 member on the surface of the tissue is a cationic member.
- 1 31. The method of claim 27, wherein the barrier component includes an amino acid.
- 1 32. The method of claim 31, wherein the amino acid is poly-L-lysine.
- 1 33. A biodegradable barrier composition produced by the process of claim 27.

- 1 34. A biodegradable fluent barrier for hindering transport an agent away from a vessel
2 comprising:
- 3 an ionic binding member for adhering to a counter ion member on a surface
4 of the vessel, and
- 5 a passive platelet inhibitor,
- 6 wherein the barrier is separate from the agent.
- 1 35. The barrier of claim 34, wherein the counter ion is anionic and the binding member
2 is cationic.
- 1 36. The barrier of claim 34, wherein the counter ion is cationic and the binding member
2 is anionic.
- 1 37. The barrier of claim 34, wherein the barrier is a naturally occurring chemical.
- 1 38. The barrier of claim 37, wherein the barrier includes a poly(amino acid).
- 1 39. The barrier of claim 38, wherein the barrier includes a poly-L-lysine.
- 1 40. A retention system for prolonging residence time of an agent at a tissue site; the
2 system comprising:
- 3 a biodegradable barrier having a binding member for adhering to the surface
4 of the tissue, wherein the barrier is separate from the agent, and
- 5 a conduit having at least one opening for administering the agent and barrier
6 to the tissue site.

- 1 41. The retention system of claim 40, further including a pump for applying pressure to
2 the conduit.
- 1 42. The retention system of claim 40, wherein the binding member is a cationic
2 member and the surface of the tissue includes an anionic member for attachment of
3 the binding member.
- 1 43. The retention system of claim 40, wherein the barrier includes an amino acid.
- 1 44. The retention system of claim 43, wherein the amino acid is poly-L-lysine.
- 1 45. A system for use in a method according to claim 1, comprising:
2 an agent for contacting a tissue site, and
3 a sufficient amount of a biodegradable barrier for hindering transport of the
4 agent away from the tissue site, the barrier having a binding member for coupling
5 the barrier to the surface of the tissue and the barrier being separate from the agent.
- 1 46. The system of claim 45, further including a conduit for administering the agent and
2 the barrier.
- 1 47. The system of claim 46, further including a pump for applying pressure to the
2 conduit.